In [2]:
```
import numpy as np
from numpy import linalg
from matplotlib import pyplot as plt
```

In [3]:
```
xdata=np.arange(1960,2020,10)
```

In [4]:
```
ydata=np.array([179323, 203302, 226542, 249633, 281422, 308746])
```

In [5]:
```
Amat=np.array([np.ones(6),xdata]).transpose()
```

In [6]:
```
bvec=ydata
```

In [7]:
```
Anormal=np.matmul(Amat.transpose(),Amat)
```

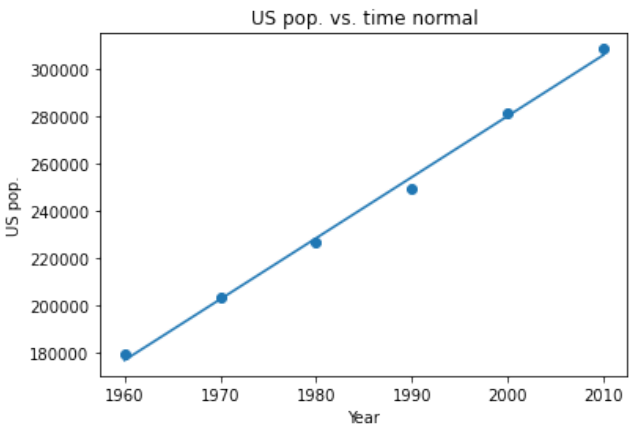
In [8]:
```
bnormal=Amat.transpose().dot(bvec)
```

In [9]:
```
xvec=linalg.solve(Anormal,bnormal)
```

In [10]:
```
xvec
```

Out[10]:
```
array([-4.88868679e+06,  2.58447429e+03])
```

In [24]:
```
c_0_A,c_1_A=xvec
plt.scatter(xdata,ydata)
plt.plot(xdata,xdata*c_1_A+c_0_A)
plt.xlabel('Year')
plt.ylabel('US pop.')
plt.title('US pop. vs. time normal')
plt.savefig('US pop vs time normal')
```



In [26]:
```
linalg.cond(Amat)
```

Out[26]:
```
230733.08869696865
```

In [19]:
```
linalg.cond(Anormal)
```

Out[19]:
```
53237758117.525375
```

In [ ]:
```

```